

REMARKS

By this amendment, applicants have amended the claims to more clearly define their invention. In particular, applicants have, inter alia, removed the word "intended" from claims 1, 14, 18 and 19 in order to avoid the indefiniteness problem noted by the Examiner in the second paragraph on page 2 of the office action.

In view of the foregoing amendments, it is submitted all of the claims now in the application comply with the requirements of 35 USC 112, second paragraph. Therefore, reconsideration and withdrawal of the rejection of claims 1 - 19 under 35 USC 112, second paragraph, are requested.

Claims 1 - 4, 6, 7, 13 - 15, 18 and 19 stand rejected under 35 USC 102(b) as anticipated by, or, in the alternative, under 35 USC 103(a) as obvious over United States Patent No. 5,730,781 to Martin et al. Applicants traverse this rejection and request reconsideration thereof.

Claims 1 - 13 relate to a process for regeneration of a used absorbent from a desulfurization zone or from the desulfurization of any gas containing sulfur oxides. The regeneration is carried out simultaneously with filtering of the absorbent in a reducing atmosphere (e.g., in a filter reactor 12). According to the present invention, the process comprises carrying out partial combustion of a regeneration gas (e.g., fed through line 24 into burner 14) upstream from the regeneration and in that the products of the partial combustion are mixed with the used absorbent (e.g., fed through valve 11 to line 13) prior to the regeneration-filtration stage (12).

Claims 14 - 19 relate to a device for regeneration of a used absorbent from a thermal desulfurization zone. The device includes regeneration means working in a reducing atmosphere by contacting a regeneration gas with the used absorbent, associated with a filtration means. The regeneration means comprises an inlet for

the used absorbent, an outlet for the gases, and an outlet for the regenerated absorbent. The device also includes means for partial combustion of the regeneration gas and means for mixing the regeneration gas with the used absorbent, arranged upstream from the used absorbent inlet of the regeneration means.

The Martin et al patent discloses a regeneration process and plant for absorbents used for processing combustion products in thermal boilers. According to Martin et al, regeneration is performed by filtering and by regenerating simultaneously the used absorbent. Two stages are carried out for the regeneration: one, which is rough stage, is performed in the presence of a regeneration gas; the other, a free stage, is performed in the presence of a fresh regeneration gas.

Applicants submit the Martin et al patent does not disclose a process including the step of carrying out partial combustion of a regeneration gas upstream from the regeneration and mixing the products of the partial combustion with the used absorbent prior to the regeneration filtration stage. Also, the Martin et al patent does not disclose means for partial combustion of the regeneration gas and means for mixing the regeneration gas with the used absorbent, arranged upstream from the used absorbent inlet of the regeneration means.

The Examiner refers to column 5, lines 41 - 49 of Martin et al in which it is disclosed that an additional furnace 50 includes a heat-resisting chamber 51 equipped with a gas or oil burner 52, which burner 52 generates fumes. In the embodiment of Figures 2 - 4 of Martin et al, however, the hot fumes produced by furnace 50 are mixed with the regenerated absorbent in line 23 so that they serve to convey pneumatically the regenerated absorbent toward the gas-to-gas exchanger 7. This apparently eliminates the generator 8 placed on line 6 in the embodiment of

Figure 1. Thus, in the embodiment of Figures 2 - 4, the products of the furnace 50 are not mixed with the used absorbent prior to the regeneration-filtration stage. Likewise, the furnace 50 is not arranged upstream from the used absorbent inlet of the regeneration means.

In the embodiment shown in Figure 5 of Martin et al, the used absorbent is preheated as soon as it leaves dust separator 1 by contacting the used absorbent with hot fumes or hot carrier gases coming from the thermal generator 50 situated at the outlet of dust separator 1. However, the thermal generator 50 does not carry out partial combustion of regeneration gas. Thus, both the process and device disclosed in Martin are different from the process and device presently claimed. According to the process of the present invention, partial combustion of the regeneration gas is carried out upstream from the regeneration and the products of the partial combustion mixed with the used absorbent prior to the regeneration-filtration stage. These steps are not carried out in any of the embodiments of Martin et al. Likewise, the device of the present invention includes means for partial combustion of the regeneration gas and means for mixing the regeneration gas with the used absorbent upstream from the used absorbent of the regeneration means. None of the embodiments of Martin disclose means for partial combustion of the regeneration gas arranged upstream from the used absorbent inlet of the regeneration means.

Accordingly, the Martin et al patent does not disclose and would not have suggested the presently claimed invention.

Claims 5, 8, 9, 16 and 17 stand rejected under 35 USC 103(a) as being unpatentable over Martin et al in view of Canadian Patent No. 1,136,384 to Longo et al. Applicants traverse this rejection and request reconsideration thereof.

The Canadian patent to Longo et al discloses, inter alia, a process for regenerating spent cerium oxide sorbent by contacting the spent cerium oxide sorbent with an H₂S containing reducing-regenerating gas comprising from 0.5 to 100.0 volume percent H₂S with the balance comprising a non-regenerating gas, at a temperature of from 300 to 700°C at a convenient flow rate. While this patent may teach one of ordinary skill in the art to regenerate a spent cerium oxide sorbent with an H₂S containing reducing-regenerating gas, it clearly does not disclose and would not have suggested carrying out partial combustion of the regeneration gas upstream from the regeneration and mixing the products of the partial combustion with the used absorbent prior to the regeneration-filtration stage. Thus, it would appear the most the Canadian patent would suggest is to use an H₂S containing regeneration gas in the Martin et al regeneration process and plant. However, such a modification would not lead to the presently claimed invention.

For the foregoing reasons, it is submitted the presently claimed invention is patentable over the proposed combination of Martin et al and Longo et al.

Applicants note the indication of allowable subject matter in claims 10 - 12.

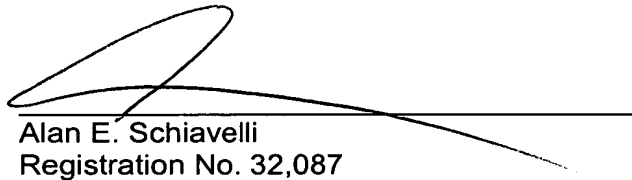
In view of the foregoing amendments and remarks, favorable reconsideration and allowance of all of the claims now in the application are requested.

To the extent necessary, applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in the fees due in connection with the filing of this paper, including extension of time fees, to the deposit account of Antonelli,

Terry, Stout & Kraus, LLP, Deposit Account No. 01-2135 (Case: 612.41094X00),
and please credit any excess fees to such deposit account.

Respectfully submitted,

ANTONELLI, TERRY, STOUT & KRAUS, LLP



Alan E. Schiavelli
Registration No. 32,087

AES/jla
(703) 312-6600
Attachments